

# THE POPULAR SCIENCE MONTHLY

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JANUARY, 1906

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WITH THE BRITISH ASSOCIATION IN SOUTH AFRICA

BY PROFESSOR ERNEST W. BROWN,  
HAVERFORD COLLEGE

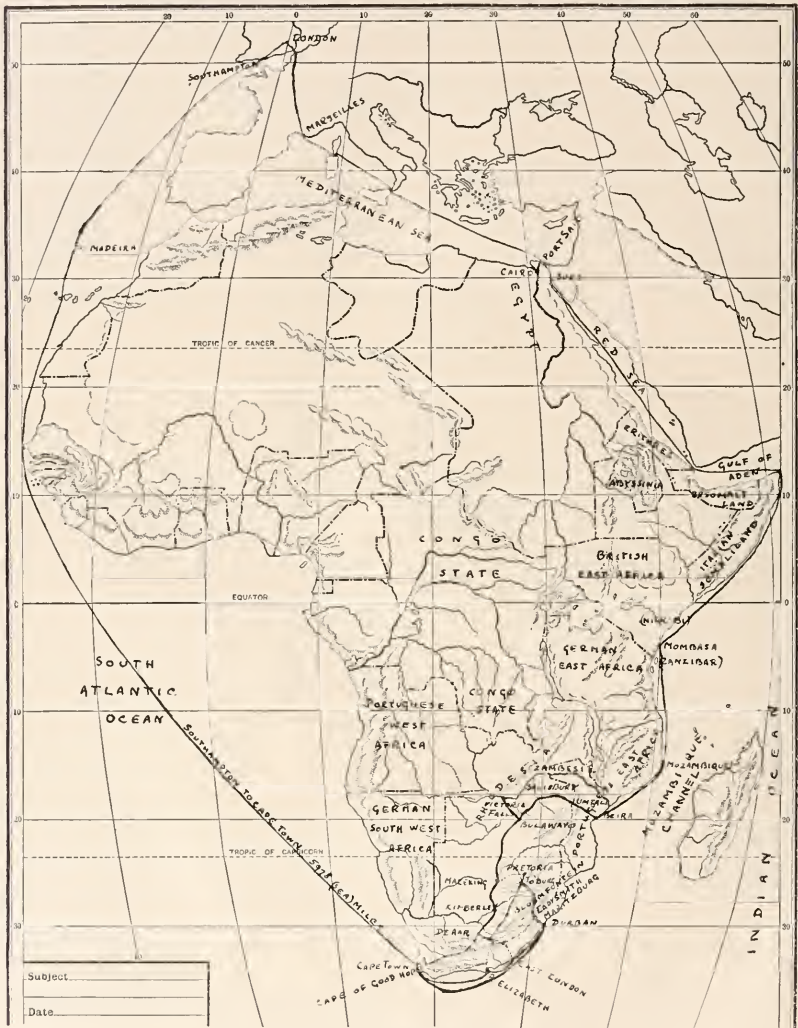
## I.

THE visit of the British Association to South Africa during the past summer appears to have established the idea that its activities in future are not to be confined to the British Isles. Two successful oversea meetings had already taken place; the first at Montreal, in 1884, and the second at Toronto, in 1897, and there seemed to be no reason why the suggestion of a meeting in Cape Town, made as far back as 1898, by Sir David Gill, astronomer royal at the Cape, should not be followed up. But there were many difficulties in the way. It was obvious at the outset that few would be willing to make two long journeys by sea unless opportunities were afforded to visit the chief places of interest in other parts of South Africa. It was obvious too that few of those whose presence was chiefly desired would be in a position to afford the necessary expense unless very considerable assistance were forthcoming, and the general funds of the association were not intended, nor were they sufficient, for this purpose. Further, there are few towns where accommodation for several hundred visitors can be obtained, and this meant that special trains with dining and sleeping cars must be provided; the trunk lines in the colonies have a supply of rolling stock not much more than is sufficient for the few who travel long distances in South Africa.

While the matter was under discussion, war broke out. But those who were interested did not lose sight of the idea, and early last year it took more definite shape in generous offers of assistance from the governments and towns in South Africa. In the meantime, many changes had occurred. The new colonies must be included in the itinerary; opportunities must be afforded to see places and districts



rendered famous during the war; the extension of the main line in Rhodesia to the Victoria Falls made a visit to this natural wonder almost a necessity; and the recent connection of the port of Beira in



SCALE. ABOUT 750 MILES TO THE INCH.

The main routes are marked with a thick line ———

Alternative routes by dotted lines .....

The dot and dash lines - - - - - show political boundaries.

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Portuguese territory with Bulawayo suggested a possible return by the east coast and through the Suez Canal.

The tour finally planned was an extensive one, as a glance at the

accompanying map will show. The Union-Castle line steamers *Kildonan Castle* and *Durham Castle*, leaving Southampton on July 22, and the *Saxon*, leaving on July 29, carried the members over the 6,800 miles which separate that port from Cape Town. From there the party traveled by sea or rail to Durban and thence by rail to Johannesburg, making stops at Pietermaritzburg, Colenso and Ladysmith. The scientific meetings were divided between Cape Town and Johannesburg, and four or five days were accordingly spent in each of those towns. After a short visit to Pretoria, the regular program involved a long journey of 1,374 miles to Bulawayo *via* de Aar Junction, the only possible all-rail route; on the way, stops of a day or two were made



GENERAL VIEW OF THE VICTORIA FALLS FROM A POINT NEAR THE WEST END.

at Bloemfontein and Kimberley. From Bulawayo five special trains conveyed the oversea party, with the addition of many others living in South Africa, to the Victoria Falls, where a couple of days were spent. On the return to Bulawayo about half the party proceeded direct to Cape Town, whence the regular steamers carried them by the west-coast route to England. The remainder went by rail through Salisbury and Umtali to Beira, where the *Durham Castle* awaited them for the east coast route. On the return journey, Mozambique, Mombasa and Cairo were visited; the presence of plague at Zanzibar and Niarobi upset the arrangements for seeing those two places, but the unexpected block in the Suez Canal enabled the party to spend much more time in Egypt than had been expected. Several members whose duties



THE SPOT IN THE SUEZ CANAL WHERE THE 'CHATHAM' WAS BLOWN UP, causing the Canal to be blocked for over two weeks.



CHARACTERISTIC KOPJES AND A PART OF ONE OF THE RESERVOIRS ON TABLE MOUNTAIN.



called them back early left by the quickest routes from Cairo, many others disembarked at Marseilles, the final port of call, and the remainder proceeded with the ship to Southampton, which was reached on October 24.

The route thus outlined was admirable for seeing as much as possible in the time, thirty-five days, which could be spent in South Africa. But many of those who went out had more specific objects in view than attendance at the meetings or sight-seeing, and arrangements were accordingly made so that any one could deviate from the official route and travel by the ordinary trains. Some went to Durban by the only railway route—through Johannesburg; others omitted Natal altogether and spent the extra time examining the geological and botanical features of Cape Colony and the Orange River Colony; some avoided a great part of the long ride from Johannesburg to Bulawayo by going on 'trek' from Potchefstroom, or from Pretoria, to Mafeking; other parties trekked from Bloemfontein through Paardeberg to Kimberley; and so on. And in each case something new and definite was to be seen or learnt.

Everywhere the arrangements made by the local committees were admirable. When it is remembered that about 360 people from Europe landed in Cape Town and were carried over an immense extent of territory, were lodged and fed everywhere in comfort and without going through any hardships beyond the fatigue caused by such rapid traveling, and this almost without a hitch of any sort, one can not too highly praise the ability and devotion of all those who were responsible for the organization. And it must be added also that it was not only those who kept to the official route who were alone considered. At every place efforts were made to find out what the various members wished to do and, if possible, arrangements were made to accommodate even a small number; alternative excursions were described in printed circulars, previously distributed, and all that was asked was for each member to apply at the committee room for tickets, so that the number joining any particular excursion might be known. At every place where a stop was made each person knew in advance where he or she was to stay, and conveyances and guides were ready at the station so that there should be no delay or confusion. For example, all that was asked of us at Johannesburg was to stand at the windows of our own compartments as the train steamed into the station, and when the train stopped each host was found standing on the platform opposite his guest. Our baggage, previously directed, arrived later in the day, and meanwhile we were driven, first to the committee room, where we made the circuit of a long counter, gathering up handbooks, tickets and mail, and then to our destinations. And so it was everywhere. No matter seemed too small for consideration and preparation. Many of us felt

that perhaps the most striking feature of the tour was the excellence and elasticity of all the arrangements made for our comfort and convenience. If the ability shown by the colonists in this direction is any guide, one should not fear much concerning the administration of the colonies in the future.

In order to secure the attendance of those whose presence was chiefly desired from the scientific side, a fund of over nine thousand pounds was raised, mainly by contributions from the governments of Cape Colony, Natal, the Transvaal and the Orange River Colony, and supplemented by subscriptions from private individuals; this was used to pay the greater part of the expenses of the 'official members.' The governments also issued free passes over railways to all oversea members, and the Rhodesian railways gave a large number for the use of the official party and tickets at half fares for all others. At those places where a stay was made entertainment was provided for the official party, either in private houses or as guests in the hotels; in some places all the members were similarly treated. Most of the excursions were free to those who chose to take advantage of them. It is a privilege to have an opportunity of saying in public what all of us felt, that the generosity and hospitality displayed by the residents of every town far exceeded our utmost expectations, and the kindness which we received is not likely to be soon forgotten. This too in a land only beginning to recover from the ravages of civil war, suffering from a two years' drought, with nearly all its cattle exterminated by disease, and in the height of the most severe financial depression it has known for twenty years.

The official party, numbering about 180, consisted of the president and general officers of the association, the president, a vice-president and a recorder in each section, a number of prominent scientific men, not necessarily officers, and some younger men of promise and ability selected by the general committee. The ladies who accompanied the official members were also attached to the official party. Finally, representatives of other countries were invited to joint as guests of the association. They included Dr. Backlund, from Russia; Professors Beck, Engler, Harzer and von Luschan, Germany; Professor Böhr, Denmark; Professor Cordier, France; Professor Donner, Sweden; Professor Penck, Austria; Professors Kapteyn and de Sitter, Holland; Mr. D. Randall MacIver, Egypt; Professors Macallum, Coleman, J. B. Porter, Canada; Professors D. H. Campbell, H. S. Carhart, W. M. Davis, W. B. Scott and E. W. Brown, United States; and others who were not able to attend.

The general officers of the association for the year are: President, Professor G. H. Darwin (now Sir George Darwin, K.C.B.); secretaries, Major P. A. Macmahon, Professor W. A. Herdman; treasurer,

Professor John Perry. The presidents of the various sections are as follows: A (Mathematical and Physical Sciences), Professor A. R. Forsyth; B (Chemistry), George T. Beilby, Esq.; C (Geology), Professor H. A. Miers; D (Zoology), G. A. Boulanger, Esq.; E (Geography), Admiral Sir W. J. L. Wharton; F (Economic Science and Statistics), Rev. W. Cunningham; G (Engineering), Colonel Sir C. Scott Moncrieff; H (Anthropology), Dr. A. C. Haddon; I (Physiology), Colonel D. Bruce; K (Botany), H. W. T. Wager, Esq.; L (Educational Science), Professor Sir Richard C. Jebb. Amongst others who attended and who are not included in the above lists or in the list of lecturers given below may be mentioned Sir Benjamin Baker, Sir T. Lauder Brunton, Professor John Milne, Dr. J. A. H. Murray, Sir W. H. Preece, the Earl of Rosse, Alexander Siemens, Esq., and Dr. A. Traill, provost of Trinity College, Dublin.

## II.

To one accustomed to the rush of the high-speed boats on the north Atlantic, the rows of huddled up and miserable passengers lying in deck chairs, the cold winds and the frequent bad weather, a journey in a mail steamer crossing the equator presents a pleasing contrast. There is a general air of sociability and comfort; sports, tournaments



SOME OF THE MEMBERS ON THE 'SAXON' before the ship left Southampton. In the top row, reckoning from the right, may be seen Prof. and Mrs. Herdman, Prof. Forsyth, Mr. Freshfield, Sir R. Jebb, Sir W. Wharton, Dr. Murray; in the second row, Dr. Haddon, Professor Perry, Sir W. Crookes, Sir L. Brunton, Major Macmahon, Mrs. Darwin; in the third row, the writer, Professor Darwin and Professor Sollas.

and entertainments of all kinds are of daily occurrence; and to these diversions were added in our case, as befitted the character of the company, lectures and discourses on subjects which were generally connected with the countries to be visited. But perhaps the most useful feature of the voyage was the opportunity it afforded for the leisurely discussion of scientific and professional matters and for establishing closer personal relations between men representing various departments of science. It need hardly be said that this was very fully appreciated, especially by those who have their work in places remote from the main centers of intellectual activity.



EUPHORBIA 'SNAPPED' FROM THE TRAIN NEAR DURBAN.

The southern gateway of Africa is an imposing sight as it is approached from the sea. A characteristic feature of the mountains, the table-like formation with high vertical cliffs on one side, has no better example than the huge mass which faces Table Bay, flanked on one side by the conical hill known as the Lion's Head, and on the other by the Devil's Hill. Cape Town lies on the low ground in front of the mountain and one can not see the old and new fortifications guarding the entrance to the docks without remembering its early settlement by the Dutch, its later acquisition by the English and the fact that, until the completion of the railways to Durban, Delagoa Bay and Beira, the story of South Africa is almost contained in that of Cape Town. All through the late war it was the principal port of entry for men and supplies and during that time was a scene of tremendous activity. It is now suffering from severe depression caused by over-speculation



in building and commerce. In spite of the fact that the population of the whole colony is less than 600,000 whites, trading was started after the war on a scale which a white population of twenty millions would hardly have justified. As might be expected in a town of nearly 80,000 inhabitants, Cape Town has the conveniences of a modern city, a fine town hall just finished at a cost of a million and a quarter dollars, a good and plentiful water supply, electric light, extended railway and trolley car lines, and a perfect sewerage and drainage system.

It is not possible for me to warn intending tourists of the troubles caused by quarantine, customs declarations, passports or baggage transport, for all these formalities were dispensed with: we had only to walk ashore in company with our hosts who had come on board the ship to meet us. The first half of the presidential address was delivered by Professor Darwin on the evening of arrival, and the following three mornings were devoted to the sectional meetings. The five days in Cape Town were spent by the different members of the party in different ways, according to their consciences or inclinations. The afternoons were generally free for excursions, and the evenings were fully occupied by receptions or lectures, well attended by both visitors and residents. Many of the geologists were attracted by the opportunity to see the country with their own eyes and obtain data for the discussion of those problems which appear to be peculiar to South Africa. The astronomers were particularly active both in Section A and in afternoon and evening visits to the observatory, the history of which furnishes remarkable examples of devotion to science; under the present director it has not only been equipped with some of the finest and most modern instruments, but has sent forth many valuable contributions towards our knowledge of the heavens. Groote Schuur, the residence of Cecil Rhodes and bequeathed to the colony at his death, was a center of interest as the home of the man 'who thought in terms, not of countries, but of continents,' and nearly every one visited the beautiful house and extensive estate with its large collection of African animals. On the last day some hundred and fifty of the party, guided by members of the Cape Mountain Club and others, climbed up various routes on to Table Mountain and sat down to a lunch provided by the mayor near the new reservoirs which supply the city with water. There were excursions also to various features of interest in the town and its neighborhood, to the De Beers Explosive Works, to the Government Wine Farm at Groot Constantia, to the Admiralty Works at Simonstown, and to the Elsenburg Government School of Agriculture at Stellenbosch.

### III.

The southeast coast railway to Durban is as yet incomplete and, to avoid the long railway journey *via* Johannesburg, the members left

Cape Town by the *Saxon* on August 18, calling at Port Elizabeth and New London, or by the *Durham Castle*, leaving the following evening and going direct to Durban. The times were so arranged that every one arrived there on the morning of Tuesday, August 22. There is practically only one good natural harbor for ships of large tonnage on the east coast of South Africa—that of Delagoa Bay, in Portuguese territory. Much money has therefore been spent in improving the harbor at Durban by building a long mole and by dredging the shallow channel which leads into a large protected lagoon. It is now possible for the mail boats to go inside and tie up alongside of the quays. One



THE CHIEF PRINCESS OF THE TRIBE WHICH GREETED THE PARTY AT MOUNT EDGECOMBE.

was struck immediately on landing by the mixture of the east and the west. Jinrickshas drawn by Zulu boys with their picturesque head-dresses, ordinary two-horse carriages, and electric cars on the trolley system carried the passengers along well-made roads bordered by trees, to private houses and hotels, where they were waited on by Indian servants. Shops of all kinds, a big department store, English churches and chapels, a synagogue, a mosque, three-storied residences, bungalows—all these made it difficult for us to realize that we were in a town which has been British territory since its foundation in 1823. As at Cape Town, there were receptions, lectures and excursions to the more interesting works of nature and man. There were only two days allotted to Durban and the majority of the party spent the greater part of one of them at Mount Edgecombe, some fourteen miles away, where the factory of the Natal Sugar Estates is situated. The company had

issued an invitation for lunch and an inspection of its works, and it had also made arrangements for us to see something of the native element by gathering together over 300 Zulus from the surrounding country. The exhibitions of war and other dances which we witnessed were much appreciated by the ethnologists and photographers. I may mention here that over a hundred cameras were continually employed on all varieties of subjects throughout the whole of the trip. In order that a record of some permanent value may be obtained, it has been proposed to make a selection of photographs taken by those who are willing to lend their negatives and to publish a memorial volume containing the best of the pictures.



THE BRIDE, BRIDESMAIDS AND INDUNA. Mr. Samuelson is standing on the right.

An even more interesting view of native customs was obtained in an excursion to the large Henley reservation near Pietermaritzburg, our next resting place. Maritzburg, as it is generally called, lies in a basin surrounded by hills and is laid out on the Dutch plan, in blocks like an American town, with broad avenues, but with houses which, like most of the residences in South Africa, are only of one story. The reservation is on higher ground and the station is less than ten miles away as the crow flies, but requires a journey of seventeen miles along a railroad with steep grades and sharp curves. The only white man living on the reservation is the permanent undersecretary for native affairs, Mr. Samuelson. By his wish, the marriage ceremony of one of the native chiefs, Mhlola, the head of the Inadi tribe, had



STREET IN MARITZBURG.



A VISITOR DURING A HALT BETWEEN MAFEKING AND BULAWAYO.



been postponed in order that the association might have the opportunity of witnessing it. The bride, who is to be Mhlola's chief wife, is a 'commoner,' contrary to the usual custom. It is probably the only occasion that a royal Zulu wedding has been attended by a large party of invited guests of the white race. We watched the official part of the ceremony for some three hours; dances, speechmaking and chanting of war-songs not unlike Gregorian chants occupied most of the time. The part of the ceremony which constituted a legal marriage was followed by the presentation of gifts from the bride to her husband's principal female relatives and of symbolical presents to the bridegroom consisting of a lamp, a water jug, basin and soap, a chair and an umbrella. The festivities were to last two or three days, but the members of the association had to leave for other scenes, and they preferred the conventional lunch provided by the residents of the city to the oxen roasted over open wood fires and the Kaffir beer in which the natives delight. This attractive program occupying the only full day spent at Maritzburg prevented many of the visitors from joining in the numerous other excursions which the hospitable residents had arranged. Some idea of our activity throughout the trip may be gathered from my movements on the previous day. Leaving Durban at 8:50 A.M. and reaching Maritzburg at 1:10 P.M., I spent the early afternoon in riding round on the electric cars, seeing the town and visiting the new botanical garden. Then to a garden party at Government House, and after dinner to a lecture on 'Sleeping Sickness,' by Colonel Bruce!

It was a fortunate circumstance that the third volume of the *Times'* history of the Boer war, containing a full account of the operations round Ladysmith, should have been published early in the year. Those who had read it during the outward voyage were able to picture to themselves the various incidents of the struggle as the trains slowly steamed through the area past Estcourt, Frere and Chiveley, to Colenso. An afternoon was spent in climbing the nearer hills of Fort Wylie and Hlangwani, and in viewing the devious course of the Tugela as it threads its sunken bed through the rolling ground lying in front of the round-topped hills which faced the army at Colenso. Stone sangars, but little damaged, are still to be seen on every hand, but the hunters of curios in the shape of bullets and portions of shells had done their work too well long before our arrival, and few relics were discovered. Here the special trains were side-tracked for the night so that the points of interest along the short distance to Ladysmith could be seen by daylight. The residents of this quiet country town lying in a warm hollow on the Klip River had gathered together every available private and public conveyance and drove us to the scene of the most famous incident of the siege, Wagon Hill. This spot, about

three miles from the town, commands it completely, and had the Boers in their determined attempt on January 6, 1900, succeeded in capturing the hill against the desperate defense made by the British, it would have been necessary to retake it at all costs or to evacuate Ladysmith. Another hill of historic interest, Spion Kop, some eighteen miles distant, was visited by a small party who had gone on ahead for the purpose. The town itself bears few marks of the siege. The hole made by a shell in the clock tower of the town hall is still unrepaired, doubtless for the sake of tourists. I noticed the remains of a few of the 'dug-outs' in the steep crumbling banks of the river, and some of the corrugated iron plates which form the walls of a freight shed at the railway station had many bullet-holes in them; they had been evidently used for cover and returned at the end of the siege.

The day at Ladysmith was followed by a night's journey to Johannesburg. The higher veld is reached along a series of heavy grades, frequently one in thirty. There is no attempt to make the line straight; tunnels, embankments and cuttings have been avoided as far as possible to save expense, and the line, especially over rolling plains, closely follows the natural level of the land. Over a thousand feet of height is gained near the border of the Transvaal by a series of zigzags up the side of a mountain; at each of these the line comes to a stop, and the train is reversed up the next portion, and then forward again after another stop. There is apparently no hill around which the line may curve easily in order to obtain the desired height.

#### IV.

Although Johannesburg has been so often described, I can not pass in silence over this focus of all the later development of the Transvaal and of most of its political difficulties during the last twenty years. Moreover, so many changes have taken place since the war ended and so much misconception still prevails about the conditions there that it is only right and perhaps not uninteresting to record the impressions of one who was anxious to learn the facts and who had various opportunities for obtaining accurate information at first hand. The most striking and noteworthy of these impressions was the absolute openness of everything connected with the mining industry. Not only have very full reports of the working of each mine to be sent in monthly to the government and to the Chamber of Mines, but every new process, every improvement in machinery, every new problem arising, every difficulty occurring in the management of the natives and Chinese, is known or can easily be found out by those living on the Rand. And this is true not only of the residents, but also of any visitors who may wish to learn the facts and will go to the proper sources for them. In our case, the chief desire seemed to be that we should get to know

what the actual conditions were, the bad as well as the good side; it was not a question of searching for information, but of listening to the full answers which an enquiry always produced. In particular, the native and Chinese compounds were visited at all hours both with and without previous notice. My own impressions and those of our party with whom I afterwards talked were the same: that the arrangements for housing and feeding the workers are far better and more complete than we had any idea of, and that the slavery which has been and is still so much exploited in meetings and newspapers of a certain class does not exist. Passes for leaving the compounds during off hours are freely granted to natives and it is only since the commission of crimes outside by a few bad characters that a restriction in this direction has been placed on the Chinese. As one walked about the compounds or in the mines underground the solemn Chinese equally with the light-hearted native readily responded to a word or a smile. 'Tell those who abuse us to come and see things for themselves'—was a frequent remark from the mine officials with whom I talked.

A second striking feature is the change which must have come over the spirit of the so-called 'Outlander' since the conclusion of the war. Formerly, Johannesburg consisted of the business section, the mines with compounds for the natives, and cottages on the mining area for the staff and white workers. During the last three years large suburbs have sprung up with many hundreds of residences surrounded by gardens and young trees, and having every appearance of permanent occupation. If this conclusion is correct, there will be a large settled population within the city area which will take an interest in its future and in the general affairs of the country, in spite of the fact that the majority of the shares of the mining companies are naturally owned in Europe, whence came the money which started them. To this must be added the consideration that nearly all the best work on the mines is being done by comparatively young men who have gone to them with the definite intention of making a living, and who have to use all the ability and energy they possess to rise to the higher positions. There is need now, however, of men of a higher grade, with, if possible, a college education and special training in some one or more of the departments connected with mining.

As might be expected, the town gives every external appearance of being alive. But it presents some curious anomalies. One has not to walk far from the principal streets with fine buildings on either side, shops, offices, clubs and hotels, to reach old shanties which look as if they had been there at the opening of the Rand. Cabs, carriages and automobiles are passing rapidly along the roads (there is no speed limit!), but there is only a single line of slow horse-cars. Instead of a modern sewerage scheme the 'bucket system' is employed. Electric

light is furnished by the municipality, but about two thirds of the current has to be purchased. It is only right to state that all these defects are being remedied at a large outlay of money, and the rates are going up at a speed which may give cause for jealousy in certain cities of the northern hemisphere. It is to be remembered that Johannesburg is only eighteen years old and that for four of these years it had to lie fallow, although it practically escaped damage. I must pass over the many interesting features of the social conditions which the society of the place has evolved.

The scientific meetings of the association, begun at Cape Town, ended with the stay in Johannesburg. Many of the papers naturally dealt with problems and matters relating to South Africa; especially was this the case in the chemical and engineering sections during the latter half of the meeting. I shall not attempt to give any *résumé* of the work done; accounts will be found elsewhere. Professor Darwin's presidential address on the evolution of matter was delivered in two halves, one at Cape Town and the other at Johannesburg. It excited great interest for its own sake and also as continuing the connection between the name he bears and the subject which first gave it world-wide fame. The many illustrated evening lectures on a great variety of subjects were a special feature throughout the tour; some of them had been prepared at the cost of much time and money, and, judging by the attendance, were very fully appreciated by those who heard them. The list included the following: 'W. J. Burchell's Discoveries,' by Professor Poulton, and 'Surface Actions of Fluids,' by Professor Vernon Boys, in Cape Town; 'Mountains of the Old World,' by Mr. Douglas Freshfield, and 'Marine Biology,' by Professor W. A. Herdman, at Durban; 'Sleeping Sickness,' by Colonel D. Bruce, and 'The Antarctic Regions,' by Mr. H. D. Ferrar, at Maritzburg; 'Distribution of Power,' by Professor Ayrton, and 'Steel as an Igneous Rock,' by Professor J. O. Arnold, at Johannesburg; 'Fly-borne Diseases, etc.,' by Mr. A. E. Shipley, at Pretoria; 'The Milky Way and the Clouds of Magellan,' by Mr. A. R. Hinks, at Bloemfontein; 'Diamonds,' by Sir W. Crookes, and 'The Bearing of Engineering on Mining,' by Professor J. B. Porter, at Kimberley; 'Experimental Farming,' by Mr. A. D. Hall, at Mafeking; 'Rhodesian Ruins,' by Mr. Randall MacIver, at Bulawayo.

(To be continued.)



WITH THE BRITISH ASSOCIATION IN SOUTH AFRICA.<sup>1</sup>

BY PROFESSOR ERNEST W. BROWN,  
HAVERFORD COLLEGE.

## V.

PRETORIA, the capital of the Transvaal, presents the greatest contrast to its ambitious neighbor forty-five miles away. Although it is 4,500 feet above sea level, nearly the average of the rest of the colony, the hills which surround it give the impression of a rather low situation, but it loses nothing from the numerous blue gums, willows and other trees which are to be found everywhere in the city. The chief interest to a visitor naturally arises from its past history and its connection with the last president of the South African Republic. The fine Parliament House and Law courts are imposing beside the many one-storied houses which constitute the greater part of the town; nearby are Kruger's house and the church which he attended. In spite of the fact that Pretoria was down on the program only as an excursion from Johannesburg, its residents were not behind those of other towns in making hospitable arrangements for such as were able to take advantage of them; perhaps the most fully appreciated was a cross country 'Trek' to Mafeking which will presently be described.

A few miles to the north lies the new Premier Diamond mine, a wonderfully rich pipe of yellow, red and blue ground which a short time ago produced the largest stone ever discovered. It is less than three years since the place was bare rolling veld; now there is a hole over seventy acres in extent and forty to sixty feet deep surrounded by machinery and a high barbed-wire fence. The statistics given to us showed that already more than a million carats of diamonds have been taken out and that test borings down to a thousand feet exhibited ground similar to that near the surface. An invitation from the management to lunch and to an inspection of the mine was accepted by at least a hundred and fifty members. It was amusing to be with and to watch the party, guided by Mr. Cullinan, the original discoverer, and his staff, wandering through the diggings and examining the ground, evidently in the hope of discovering another Cullinan diamond; and later crowding round the tables on which the concentrates were spread for examination—the stage where mechanical treatment ends and hand labor begins—and picking out a few small stones. This final process is shortly to be replaced by a mechanical one based

on the fact that the diamond seems to be the only stone which will stick to a bed of grease when a pan of 'concentrates' (the remainder after all the earth and lighter material have been washed out) is passed over it with a properly adjusted flow of water.

A cross country trek from Pretoria to Mafeking seemed to offer greater attractions than the 882 miles of rail which separate those places, in spite of the fact that Bloemfontein and Kimberley would thus be omitted. At present there are no rail connections between the two trunk lines going north from De Aar Junction (which lies just south of the Orange River), although Klerksdorp, the terminus of a branch line from Johannesburg, and Mafeking, on the Cape-Bul-



SPOT (in the bank near the telegraph post) WHERE THE FAMOUS CULLINAN DIAMOND WAS FOUND.

away railroad, are only 93 miles apart. These connecting links are of course valuable for opening up the country through which they pass, but it is difficult to get a return on the capital laid out where the chief traffic is to and from the coast and not an exchange between inland centers. But it is hoped that the time is not far distant when the farms in this district may furnish regular supplies to the large towns and make them independent of imported food produce. Railways are already projected from Pretoria to Rustenburg, sixty miles to the west; and also from Klerksdorp to Fourteenstreams which lies on the Cape-Bulawayo railway, 140 miles to the southeast, thus making the first connection between the two trunk lines north of their branching point.

## VI.

The route chosen for the journey to Mafeking by road lay through 180 miles of some of the most fertile districts of the Transvaal and included nights spent at the small towns of Rustenburg, Zeerust and Ottoshoop. Two stage coaches, each capable of carrying eighteen passengers with baggage, and a large ambulance wagon were provided for the accommodation of the party which, with guides and leaders, numbered thirty. These coaches have of course been gradually supplanted by railroads where there was sufficient traffic to justify a regular service, but they are still in use in Rhodesia. As the illustration



AN IRRIGATION DAM AND TRENCH ON MR. GINSBERG'S FARM. (Photo lent by Mr C. G. Darwin.)

shows, they are of the Concord type and indeed those which actually conveyed us were built in the United States. Six pairs of mules were harnessed to each coach. We were accompanied throughout by Messrs. H. H. Hewson, W. D. Sievwright and G. W. Herdman of Pretoria, and it was mainly owing to their care and thoughtfulness for our welfare that no serious mishap occurred during the six days' trek. The magistrate of each urban district through which we passed also joined the party, while it traveled through his territory, and much was learnt of the land and its people from these gentlemen and from residents whom we met along the route from time to time. The limits set to this article forbid more than a brief account of the general impressions gained. It must suffice to mention that the first night we camped





CROSSING A DRIFT.

luxuriously on Mr. S. Ginsberg's farm as his guests, the camp having been provided by the Royal Engineers, and the next morning wandered over the farm inspecting the experimental growing of tobacco and oranges and an irrigation trench, some two and a half miles long, carried round the side of a hill. Another night we slept on the open veld wrapped in blankets and rugs. Our experience of the hotels at the three towns mentioned above was a favorable one; they have nothing to lose by a comparison with those in places of a similar size in either Europe or America.

The government is carrying on the work of improving the main roads in farming districts by building bridges over the deeper 'drifts' (fords where the rivers can be crossed), by metalling the surfaces, and by digging side trenches to carry off the torrential rains during the wet season. This is in line with the policy of developing the agricultural possibilities of the Transvaal through an increase in the facilities for getting the produce to a market. But the difficulties of raising it are many. The cattle have been nearly exterminated by war and disease; to prevent the spread of the latter in future the farms are being accurately surveyed and surrounded by barbed-wire fences. The raising of crops with any regularity seems to require expensive schemes of irrigation and the construction of dams to store the water, but it is by no means certain that these schemes can be made to pay their cost. Tobacco growing has long been fairly successful in some parts and the leaf finds a ready sale. Some fruits, especially oranges, can be also



grown with success where the farmer has sufficient capital to await the time necessary to get a crop, but the cost of transportation prevents export in competition with the fruits produced in other parts of the world. It is well known that a great effort has been made by the government to get the Boers back on their farms, and we saw one example of this in the new houses which have been built near the roofless walls of every old one that we passed. For the Dutch settler is in general the only class which has so far succeeded in extracting a living out of the land, partly owing to his few needs and his content with meager surroundings, but he is in some ways an obstacle to development by his constitutional dislike to any alteration of the methods handed down to him from his ancestors.

On every side were to be seen evidences of the long-continued guerilla warfare; block houses perched on the hills, sometimes in long rows a mile or two apart, at other times in isolated places; an occasional area covered with rusty tin cans showing where a concentration camp had been situated; skeletons of cattle and mules along the roadside; an acre of the whitened bones of oxen, the scene of the destruction of a convoy caught in a trap. Many of the pleasures and troubles of trekking were experienced. The night under the open sky on the veld, various breakdowns and minor accidents, the hot noon suns and cold starlit skies, the clouds of red dust raised by the mules—all combined to give some idea of that fascination for traveling in Africa which has so often been the theme in stories of fact and fiction.



TREE IN RUSTENBURG UNDER WHICH THE LATE MR. KRUGER PREACHED HIS FIRST SERMON TO THE BURGHERS.

Mafeking has little of interest for the ordinary sightseer and nothing remains of its spectacular siege except a few banks on the flat plain showing where the trenches had been placed. The native 'staadt' contains some five thousand blacks living in huts and houses of sun-baked bricks and plaster, with occasional corrugated iron roofs. The special train only stopped here long enough to gather up those who had come by road from the Transvaal. All the following day was spent in running along over the brown veld, sometimes flat and bare, sometimes covered with thick bush, but generally rolling country dotted with trees and intersected here and there with the dry beds of



AN INCIDENT OF OUR 'TRFK.'

streams. At this season of the year the ground has become parched under the hot sun and long coarse dry grass covers the whole face of the country. A tree with a straight trunk is rarely visible and the twisted branches were devoid of foliage except where parasitic growths, frequently species of mistletoe, showed their bright green stems. All the way from Durban to the end of our ride, grass fires, started by the farmers to clear off the ground before the rains, were visible and often made the nights picturesque as they slowly burned their way in long lines over the plains and hills.

The standard South African railway gauge is forty-two inches, fourteen and a half inches less than the ordinary one. This is probably an economical width for the present needs of the country, but it introduces difficulties in the construction of comfortable sleeping ac-

commodation. The present type of car used on the Cape government railways has a very narrow side corridor from which open compartments, each containing four berths, two upper and two lower, transverse to the length of the car. These berths are rather short for one a little over the average stature, and the lavatory accommodation is somewhat limited. But the dining cars provide excellent meals at two dollars a day and this in a country into which much of the food is at present imported must be considered very moderate, especially north of De Aar Junction. The new cars on the Natal railways are, however, of a much more roomy and convenient type. It was in special trains made up from these cars that the majority of the members of the association was to spend most of the two weeks following the departure from Johannesburg. The life on board was not uncomfortable, and there was plenty to interest in the views which successively passed before us as we steamed along at fifteen to thirty miles an hour, or in discussions on what we had seen and heard. Then at every stopping place, and these were not infrequent for taking water or coal, the zoologists swarmed from the train with nets and snared every insect within a radius of two hundred yards, and the geologists with their hammers gathered in treasured specimens of rocks. The engineer became skilful in solving the problem of gathering up the passengers and not wasting time in waiting for the laggards, by steaming so slowly out of the way side stations that any one not more than a hundred yards from the train when it started could easily get on board.

## VII.

Bulawayo, the principal town in Rhodesia, exhibits strongly the large ideas of Cecil Rhodes and his confidence in the future. Laid out in blocks, with streets far wider than one finds even in the most modern towns, its principal buildings in the center near an immense market square, Bulawayo is prepared for development to an extent which seems to be out of proportion to its needs for many years to come. At the present time there are many inconveniences in having the town so widely spread out, and the expense of running it is not small. Except in the center, one can drive along roads with name posts at every corner, but not to be traced otherwise than by wheel tracks in the yellow dusty ground. Rhodes's house, presented by him to the government, is situated on a hill three miles from the town and is connected with it by a perfectly straight and broad road planted with a double avenue of trees. A better method could hardly have been devised for enhancing the dignity of the approach to his residence or for striking a note in his character—the direct route to his objective and a well-marked way for those who should follow in his footsteps.





THE PRINCIPAL STREET IN BULAWAYO.

The poetic side of his nature is shown in his choice of a final resting place. From a point twenty miles along the railway south of Bulawayo a branch line runs towards the Matopo hills where he had a large estate. A drive of eight miles from the hotel at the terminus leads into wild scenery along gradually ascending valleys, past large enclosures containing wild animals and through a park which is being continually improved by the planting of trees and all kinds of flora. On either side the road is flanked by hills which seem to have been built up by Titans who piled up rocks and boulders in every conceivable position, perching them on the tops and sides of smooth turtle-back shaped rocks five hundred feet high, or dropping them on the plain and covering them with bushes and trees. As the 'Roof of the World' is approached, the carriages are left and a footpath ascends gradually over smooth rock on to the flat top of one of the highest of the hills—the 'World's View.' On this spot, enclosed by a circle of boulders some fifteen or twenty feet high, is placed the grave dug out of solid rock and covered by a plain slab bearing only the simple inscription, 'Here lie the remains of Cecil Rhodes.' A not unpleasing contrast is afforded by an elaborate monument nearby erected to the memory of Major Wilson and his comrades who fell at the Shangani River on December 4, 1894.

This large estate was owned by Cecil Rhodes and was left by him under the care of the trustees for the benefit of the public, full direc-



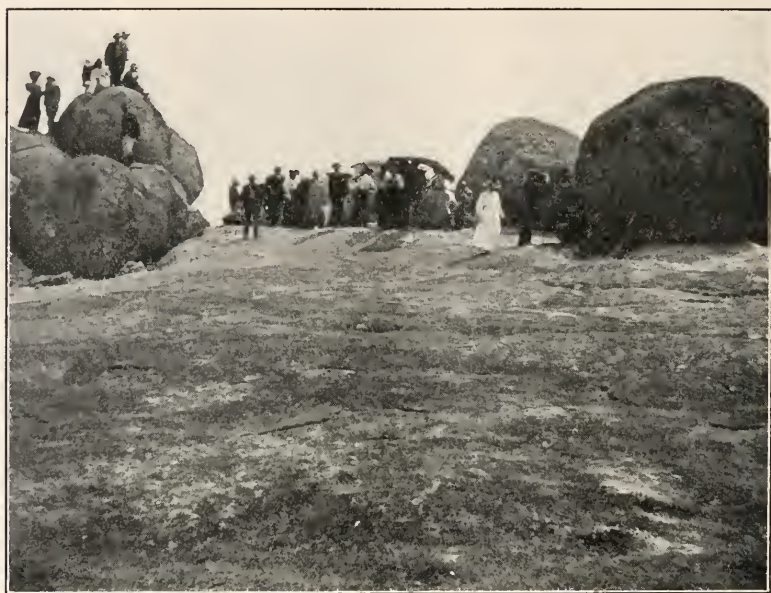
tions being given in his will for improving the property with the help of funds which he designated for the purpose. One can not travel through Rhodesia or indeed through any part of South Africa without feeling how strongly the ideas of this one man have dominated and still largely determine the development of the country. Whatever we may think of his career, we are forced to admit that the reverence felt for him and his opinions by those who worked with or under him mark him out as a personality of unusual force. He inspired too an enduring belief in the future of Rhodesia, and this in the face of almost every difficulty that a new country has to undergo. Against the condemnation of some of his actions at the bar of public opinion is to be set the opinion of those who knew him and who believe that he acted consistently with a high standard of his own and that at his early death the British Empire, and perhaps the world, lost one who might have achieved a foremost place in the history of nations.

The Victoria Falls on the Zambesi river lie 282 miles to the northwest of Bulawayo. The curious box-like formation into which the water drops with the lip over a mile long and the opposite ground on the same level and not more than 150 yards away, gives unusually fine points of view and permits every part of the falls to be seen. When the water is low, as was the case at the time of our visit, one can see down to the bottom of the chasm 400 feet below; or cross over to the islands above and look down into the depths from the uncovered rocks with the water tumbling down close by. The river leaves the 'box' by



HOTEL AT THE VICTORIA FALLS.

a narrow opening some distance from the middle of the long opposite edge, and pursues its way through a deep gorge which winds to and fro like the strokes of the letter W several times repeated, showing clearly the successive stages by which the river bed has burrowed its way through the country. The 'rain-forest,' a thick mass of trees and undergrowth, and the Palm Kloof, a ravine leading down to the bottom of the gorge, are kept moist by the shifting masses of spray. Above the falls, the banks are clothed with tropical vegetation and the long reaches of apparently calm but swiftly flowing water show little of the many hidden dangers which small craft passing along them must avoid. The marvels of nature are perhaps equalled by those of civilization.

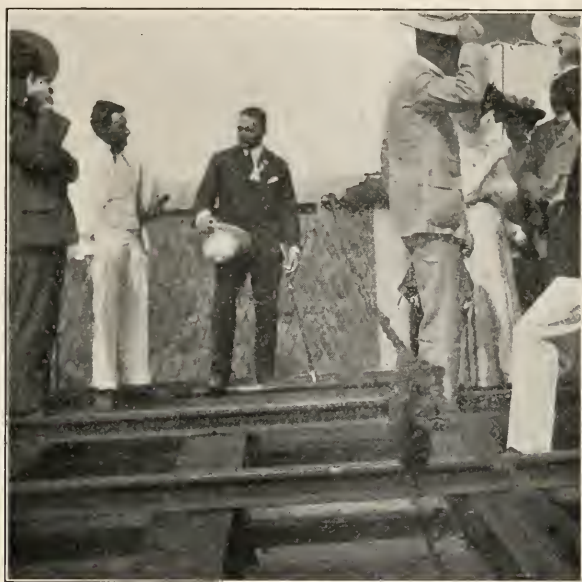


THE 'WORLD'S VIEW'

Ten years ago not more than thirty white men are known to have visited this spot since its discovery in 1855 by Livingstone, and last year it was connected with Bulawayo by rail. The line has now been carried over the gorge just below the falls by a bridge 650 feet long and 350 feet above the water, finished last spring; it is being continued now to Lake Tanganyika, and had in September reached a point 160 miles from the Falls towards this objective. Perhaps the greatest marvel of all, as Professor Darwin remarked in opening the bridge to passenger traffic on the morning of September 12, was that his speech on that occasion should appear in full in the London afternoon papers of the same day.

Tourists will now find no difficulty in reaching the Falls nor will

they need to expect discomfort while staying there. The hotel, about a mile from the principal points of view, supplies food and lodging on much the same scale as those in other parts of Rhodesia. Perhaps the greatest satisfaction on arrival is the absence of any feeling of disappointment, however much one may have heard or read of the beauty and magnitude of the falls, and civilization has so far done nothing to spoil the views. Mr. F. W. Sykes, who has been appointed conservator by the Chartered Company, has constructed paths so that visitors may approach every point of view and enjoy the scenery without the encumbrance of a hired guide. The new bridge rather adds to the effect than otherwise: as one descends to the bottom of the gorge amidst the



THE PRESIDENT OPENING THE BRIDGE.

trees and undergrowth in the Palm Kloof, its graceful arch gives the eye a resting place near the top and assists one to appreciate the height of the rugged vertical cliffs. I understood that the power house is to be constructed at the foot of the second bend of the gorge, the water being conveyed from above the falls by a tunnel or canal, so that nothing of it will be visible from the usual points of view. It is intended that no new buildings shall be placed on the general level of the land within a radius of a few miles and plans are even in existence for moving the present hotel further away. As to the available energy for commercial purposes, the latest estimates give a minimum of 300,000 horse-power at low water as against 5,000,000 at Niagara; but after the rains there would be many times this amount so that even if the minimum





RAINBOW SEEN LOOKING ALONG THE FALLS FROM NEAR THE WEST END.



PART OF THE 'MAIN FALL' FROM LIVINGSTONE ISLAND.



should be wholly employed, the spectacle at full flood would not be very seriously affected. The opinions of the residents as to the best time for a visit are divided. Some preferred August and September when the water is low and the air comparatively clear of mist; others recommended January and February for seeing the huge masses of water which then cover nearly the whole width of the lip but which can only be seen in glimpses as the spray shifts about.

### VIII.

On the return to Bulawayo, the east and west coast parties separated, the latter going direct to Cape Town and thence home. The rail journey to Beira on the east coast was broken at Salisbury and Umtali. Both of these towns are situated in or near gold-bearing districts. The region is interesting too to ethnologists on account of the ancient ruins to be found at Zimbabwe and elsewhere, but it was sad to learn that all the later evidence so far obtained has destroyed any connection between Rhodesia and the land of Ophir. The party, now reduced to two hundred, was entertained at Salisbury and Umtali by the residents to lunch; and similar hospitality was shown by the governor, the Portuguese officials and the Mozambique Company at Beira. Our debt of gratitude to these three towns is the greater for the trouble and expense to which the small number of residents had put themselves, although our stay in each had to be limited to only a few hours; there was no chance to make even the small return in our power by giving lectures or by learning, except in conversation, of the development of the districts round these recent settlements.

A few concluding words on Rhodesia must suffice. The details of its administration and development by the British South Africa Chartered Company are to be found in the published reports and circulars of the company. As to its possibilities, I can only give here, with all reserve, my own opinion formed on what I saw in the rapid journey or learnt in several conversations with various officials and others. In its general characteristics, the country does not appear to differ greatly from the Transvaal. But it seems to have rather better advantages. Its soil is perhaps more fertile, its rains more certain and droughts less frequent. The mineral wealth is considerable; there are excellent coal seams, a rich copper mine and, if the present prospects are fulfilled, valuable gold fields. A magnificent river flows through the country, adapted at the Falls to furnish power for all purposes in the driest season and possibly available in the future for irrigation if necessary. An unbounded enthusiasm and belief in its future amongst those who are administering its affairs there are not amongst the smallest of the assets of Rhodesia.

The 'Durham Castle' left Beira on September 17. A brief call of

a few hours was made at the low island built of coral on which Mozambique stands. The town is picturesque with its square topped houses and walls washed a bright red, yellow and light blue, the native huts of bamboo thatched with palm leaves, and the numerous palm trees growing everywhere. A stay of a day and a half allowed us to see Mombasa, to make purchases in its native bazaars, and to take a journey by train to Maseru, fourteen miles up into the country. The town is close to the equator and we saw luxuriant tropical vegetation, cocoanut and other species of palms, and the huge squat trunks of the baobab—a pleasing contrast after our long experience of the dried-up veld. Leaving there, eleven days of burning sun and hot stifling nights in the Indian Ocean, across the gulf of Aden and up the Red Sea whose waters one day showed a temperature of 92° Fahrenheit, brought us to Suez. After a week in Egypt necessitated by the block in the Canal, the ship left Port Said for Marseilles where many landed in order to reach England rapidly. The remnant, passing through the Straits of Gibraltar and crossing the Bay of Biscay, disembarked at Southampton on October 24.

The one sad incident which occurred during the tour was the illness and death of Sir William Wharton, at Cape Town, after our departure from Beira. His work and scientific attainments will find a more fitting record elsewhere. Those who had learned to know him as a fellow-traveler can readily understand and sympathize with the sense of loss experienced by his family and many friends. As I revise these lines comes the news of the death in Cambridge of another member of the party which will not be less severely felt. Sir Richard Jebb, perhaps the most distinguished scholar of his day and a leading authority on educational questions. One rarely talked with him without drawing something interesting from his great store of knowledge and he added much to the success of the meeting and the pleasure of the voyages by his presence amongst us.

## IX.

It is almost impossible to sum up in a few sentences the wealth of impressions received during the five weeks in South Africa and the subsequent brief visits in East and North Africa. A ‘gigantic picnic,’ as Professor Darwin characterized the tour in one of his speeches, it truly was; but it was also a ‘scientific picnic’ with wonderful opportunities for profit to those who wished to take advantage of them. The various handbooks, specially prepared for us, on matters connected with the colonies, the arrangements made for seeing everything without waste of time and with the minimum of trouble, the way in which all the people put themselves at our disposal whether for showing the country or for telling what they knew—all helped to make the experi-

ence no ordinary one and enabled us to carry away facts and ideas which could hardly have been obtained in a much longer period. To those who are accustomed to travel in Europe and who have money and leisure for four months or more away from home, a visit to South Africa is to be highly recommended. The steamers, while not equipped with the excessive luxuries of the most modern North Atlantic boats, are comfortable and sail over waters which are rarely disturbed by storms or gales. The long distance trains are at least as good as those in Europe, and hotels, accustomed to cater for English people, will be found everywhere. The cost of such an expedition extended



A STREET IN MOMBASA.

over four months need not exceed fifteen hundred dollars per head, including passage money.

Finally, what should South Africa hope to receive in return from those who have accepted her hospitality? An increased sympathy with her people, a better knowledge of their struggles in developing the resources of the country, and an attempt to put an end to the long career of misrepresentation which has been pursued by many public bodies and private individuals in the mother country, doubtless. But there is more. The colonies are not lands where the agriculturist can simply sow his seed and watch his crops grow; where the rancher can stock his farm and await the increase; where the planter puts in his trees and leaves them until the harvest is ripe; where the miner has only to dig out the gold and grow rich quickly; or where the trader can take his goods and calculate his profits beforehand. Irrigation,

and, in many cases, fertilization of the soil, are generally necessary for obtaining a moderate crop; cattle must be protected from the parasites and diseases which carry them off wholesale; the planters must make many experiments to find suitable trees and then discover a market for his fruits; gold digging can only be made to pay by companies with large financial resources employing the most modern scientific methods for the extraction of the metal; and the trader is handicapped by the cost of transportation and the small demand for his goods. These are some of the problems which the colonist asks his visitors with their store of knowledge to help him to solve: he needs every device which science can furnish to enable him to exist. Further, his land has been



INSIDE THE MOHAMMEDAN UNIVERSITY IN CAIRO. (Photo lent by Mr. C. G. Darwin.)

lately rent by civil war, and two white races with totally different ideals must live side by side working together for the common good: the black races, far outnumbering the settlers, present problems at least as difficult as those we have to deal with in the United States. He asks too for help in building up schemes of education for both black and white, and these schemes must include primary and secondary schools, colleges and universities for the study of the humanities and pure science, and, what is perhaps more important than all for the prosperity of the colonies at the present moment, institutions where elementary and advanced technical education in all its branches can be obtained. If any help is forthcoming towards the solution of these questions, South Africa will feel well repaid for her hospitality and will consider that the visit of the British Association to her shores has not been in vain.